

John Marshall SWCD Annual Awards Luncheon NOVEMBER 13, 2019



John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon



Overview

1) Pollinator Primer

- 1) Pollination ecology
- 2) Bee groups in Virginia

2) Threats

1) Issues on ag lands

3) Pollinator Habitat in Ag Lands

- 1) Where they live
- 2) Management recommendations



Common buckeye on panicled aster, PEC headquurters



Before we get started....

• Yellow jackets are not bees! ————



- Yes, Carpenter bees are good pollinators
- Majority of native bees are solitary (no nest to protect) and do not sting. (Plus only female bees have stingers)
- Honey bees are from Europe, considered domesticated

Who are our North American Pollinators?

Bees

Butterflies

Beetles

Flies

Ants

Moths

Hummingbirds

Skippers









Bees by the Numbers

- 4,000 bee species in N.A.
- 400 species recorded in Virginia
- 79 species in 2015 regional survey*
- 8 species listed under the ESA

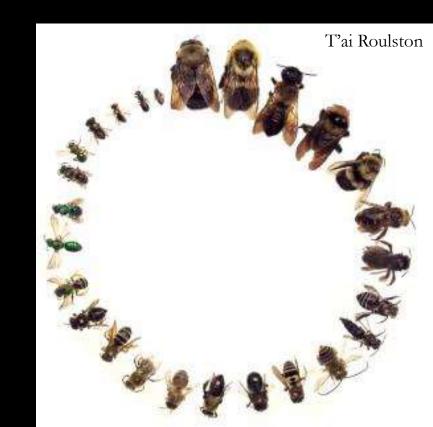


Bombus fervidus on thistle

5 Groups of Bees (Families) in Virginia

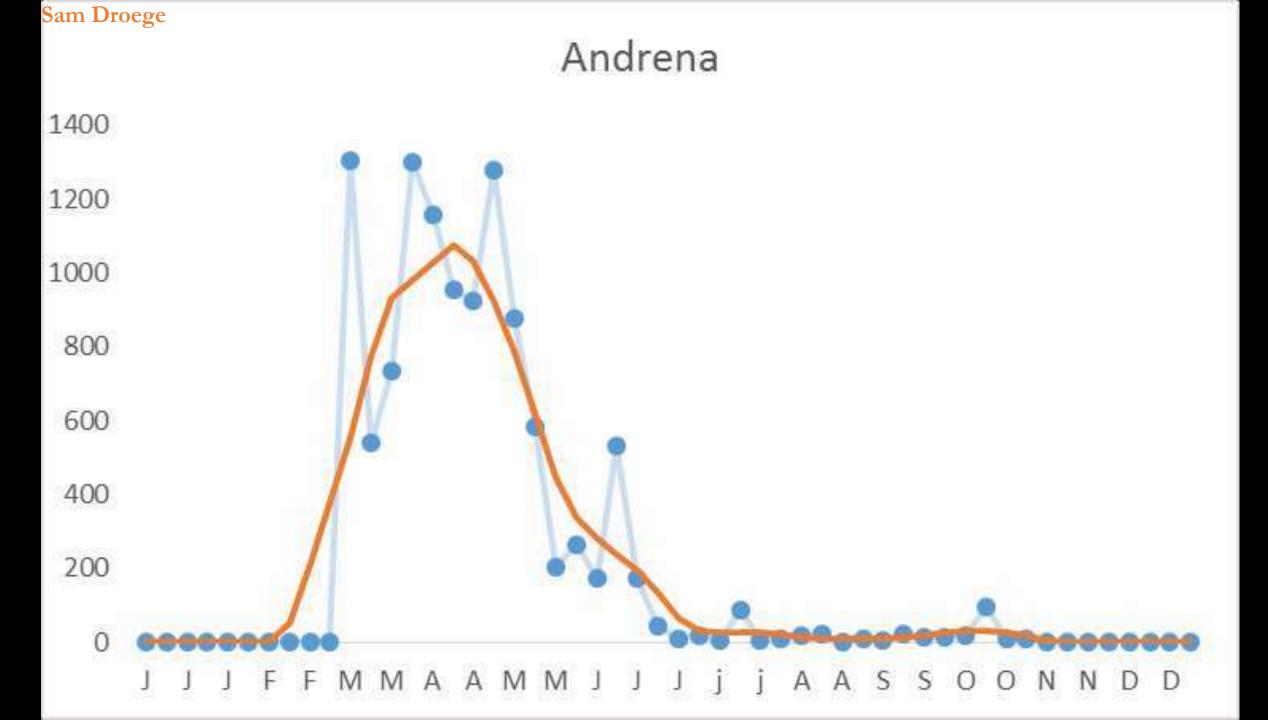
- 1. Bumble Bees, honey bees, carpenter bees (Apidae)
- 2. Mason/leaf cutter bees (Megachilidae)
- 3. Sweat bees (Halictidae)
- 4. Plasterer bees (Colletidae)
- 5. Mining bees (Andrenidae)

"Farmers gain an estimated \$311/acre of fruit for each additional bee group foraging in their fields" Pearson, 2014.



Pollinator Syndromes: "Who Likes What"

Type of Pollinator								
Trait	Bat	Bee	Beetle	Bird	Butterfly	Fly	Moth	Wind
Color	White, green or purple	Bright white, yellow, blue, or UV	White or green	Scarlet, orange, red or white	Bright red and purple	Pale,or dark brown, purple	Pale red, purple, pink or white	Pale green, brown, or colorless
Nectar guides	None	Present	None	None	Present	None	None	None
Odor	Strong and musty; emitted at night	Fresh, mild, pleasant	None to strongly fruity or foul	None	Faint but fresh	Putrid	Strong sweet; emitted at night	None
Nectar	Abundant; somewhat hidden	Usually present	Sometimes present	Ample; deeply hidden	Ample; deeply hidden	Usually absent	Ample; deeply hidden	None
Pollen	Ample	Limited; often sticky, scented	Ample	Limited	Limited	Limited	Limited	Abundant; small, smooth
Flower Shape	Bowl shaped; closed during day	Shallow; with landing platform; tubular	Large and bowl- shaped	Large, funnel -like; strong perch support	Narrow tube with spur; wide landing pad	Shallow; funnel- like or complex with trap	Regular; tubular without a lip	Regular and small



Bees as Crop Pollinators

• Bumble bees

- Orchards, berry bushes
- Greenhouse operations (tomatoes, etc.)—buzz pollination



- Orchards
- Managed nests ————

• Other native bees

- Squash bee: cucurbits
 - Pollinate at dawn
 - 6-10 visits to pollinate 1 flower
 - Nest at base of plant





Non-bees are responsible for up to 1/3 of crop pollination

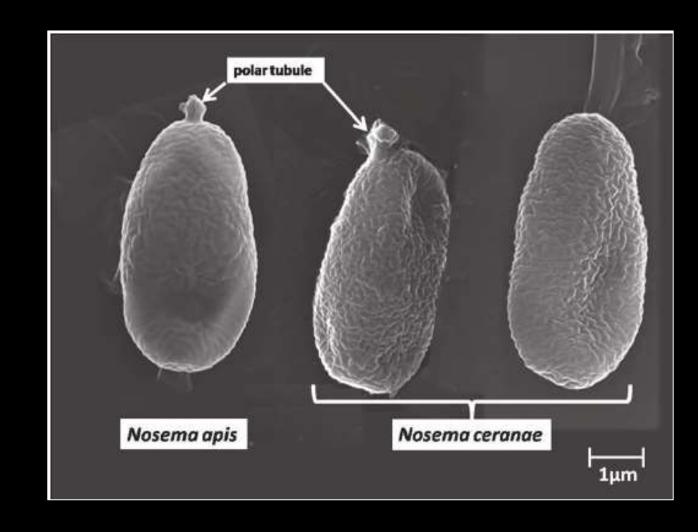
(Rader et al 2016. Non-bee insects are important contributors to global crop pollination.)





Threats

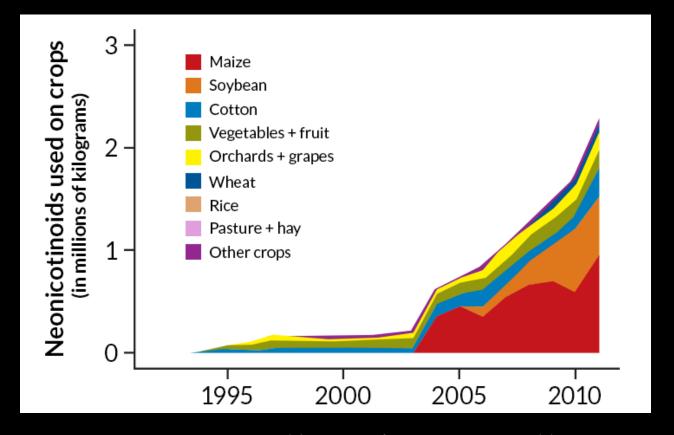
- Pathogens
- Pesticides
- Climate change
 - Bloom times
 - Range constriction
- Habitat loss



Insecticides

Neonicotinoids (neonics)

- Systemic
- Last in soil for years
- "sublethal" effects
 - Affect foraging behavior
 - Cognitive and reproductive abilities



Source: DOUGLAS AND TOOKER/ENVIRONMENTAL SCIENCE & TECHNOLOGY 2015

• Found in ag and residential pesticide products

- Imidacloprid (most common)
- thiacloprid, clothianidin (8 altogether)



Components for Bee/Butterfly Habitat

- SUN!
- Forage (flowers)
- Nesting opportunities
 - Leaf litter
 - Woody debris
 - Dead stumps/snags



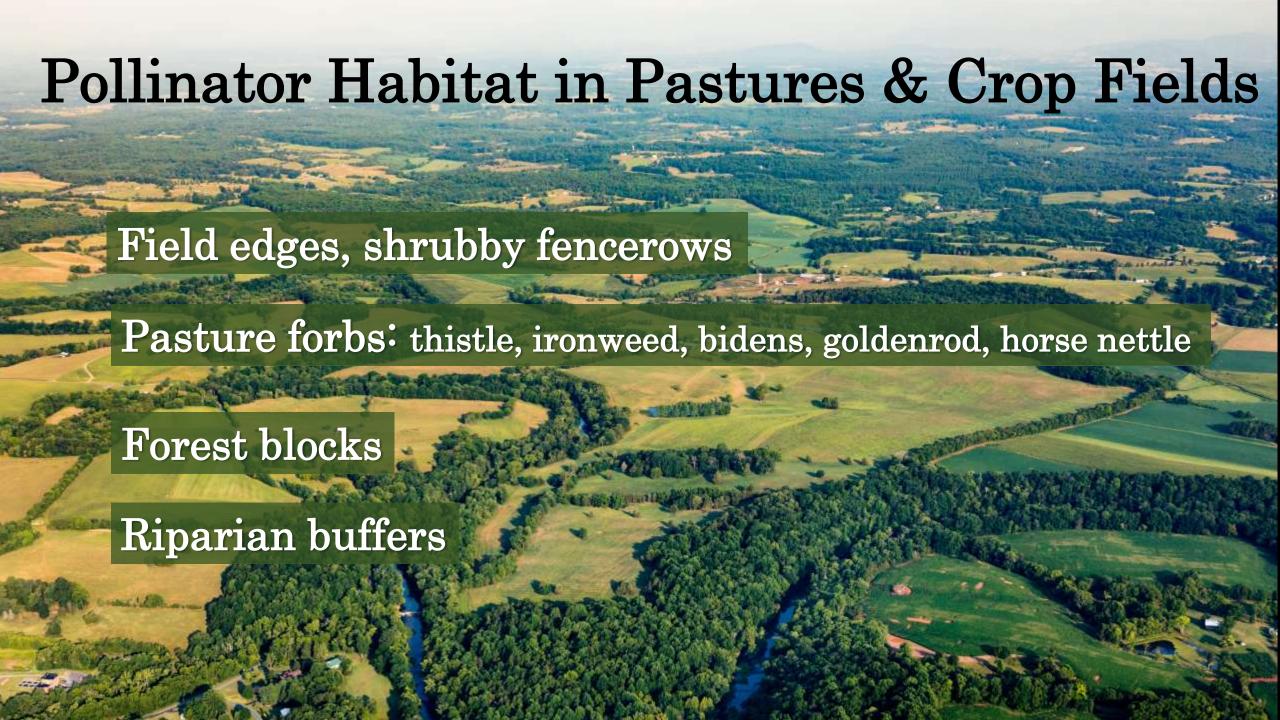
Front Royal, Virginia

Pollinators are found in diverse, open habitats with woodlands & transitional areas....





Mosaic of habitats in landscape support the most pollinators....



Pollinator Friendly Practices: Pastures

- Rotational grazing
 - vs. over grazing
- Native warm season grasses & forbs for grazing
 - Native legumes (clovers, tick-trefoil, etc.)
- Protect overgrown fencerows, manage invasives —
- Mowing fallow fields
 - Maintenance mowing once annually
 - Feb 15- April 1



Pollinator Friendly Practices: Crops

• Insecticide application:

- Follow label guidelines
- Apply when bees/butterflies are less active (hour after sunset) and temps are warmest (to reduce longer periods of toxicity)
- Do not spray directly onto flowers •
- Use pesticides that have the least impact on bees but target other pests
- Consider IPM
- Tilling practices
- Protect overgrown fencerows, manage invasives
- Adding pollinator habitat



Squash bee

In a nutshell.....

- 1) Recognize areas of existing pollinator habitat
 - 1) Shrubby hedgerows, forest blocks, natural areas etc.

2) Adapt existing farm practices where practical

- 1) Rotational grazing, NWSGs
- 2) Pesticide use/IPM
- 3) No/delayed till

3) Creating habitat

- 1) cover crop selection
- 2) Pollinator habitat (annuals vs perennials)
- 3) Bee nest sites or structures





Celia Vuocolo
Wildlife Habitat & Stewardship Specialist
Piedmont Environmental Council
cvuocolo@pecva.org



John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon

2019 EDWIN F. GULICK CONSERVATION EDUCATOR AWARD O.B. Messick & Sons



















































































Messicks have been conducting Field Day Programs Since 1995

29 Field Days



Cedar Lee Middle School
Taylor Middle School
Warrenton Middle School
Highland School
Wakefield School
2 Elementary Schools
Home School Groups



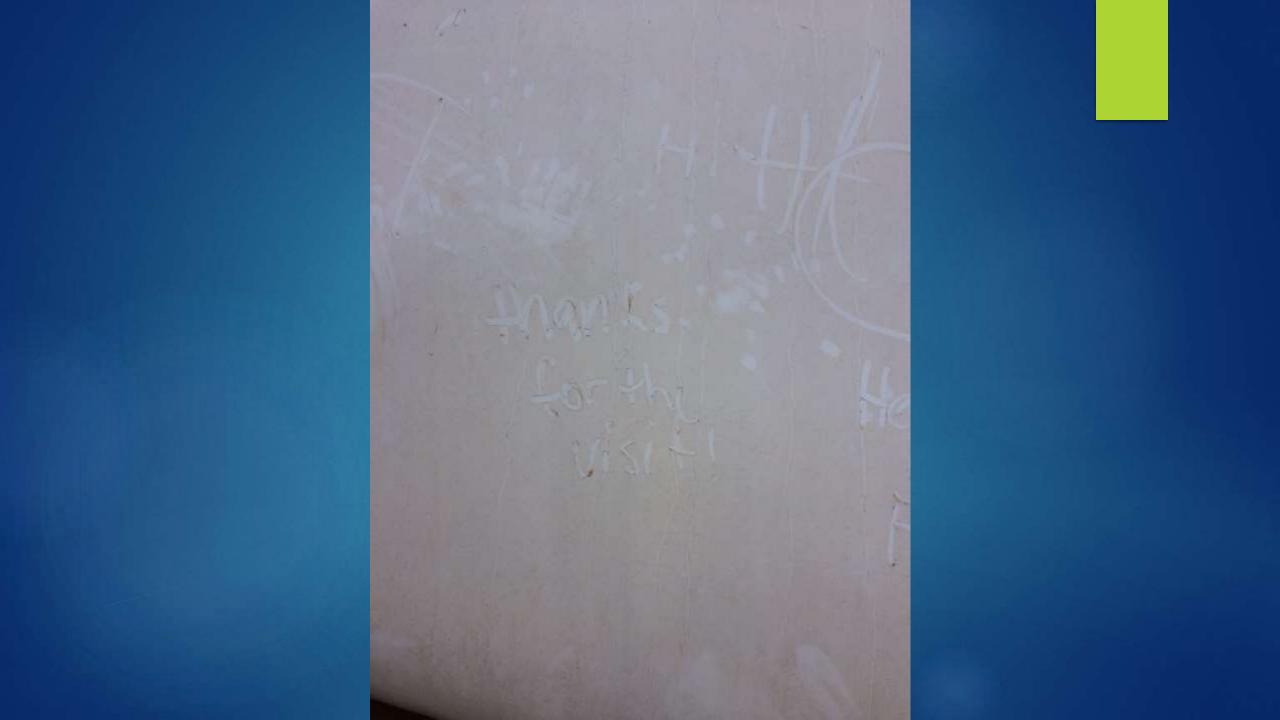






5,255





JOHN MARSHALL SWCD recognizes

O.B. MESSICK & SONS FOR THEIR OUTSTANDING CONTRIBUTION TO EDUCATION IN FAUQUIER COUNTY.

CONGRATULATIONS!

2019 EDWIN F. GULICK CONSERVATION EDUCATOR AWARD



John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon

2019 JMSWCD Partner Award





Rappahannock Area Team

The Virginia Department of Forestry (VDOF) works to ensure that forests and the waters that flow from them are protected today and for future generations

AREA OFFICES OF VA DEPARTMENT OF FORESTRY:

PROVIDE LANDOWNERS WITH SITE EVALUATION AND CONSULTATION FOR PLANTING, PRE-HARVEST AND FOREST STEWARDSHIP PLANS, AS WELL AS PRESCRIBED BURNING SERVICES AND WILDLAND FIRE SUPPRESSION. THEY ENFORCE STATE LAWS AND REGULATIONS GOVERNING STATE FORESTS AND FOREST RESOURCES. THE DEPARTMENT ADMINISTERS A VARIETY OF COST-SHARE PROGRAMS SUCH AS TIMBER STAND IMPROVEMENT, FOREST ROAD STABILIZATION AND PLANTING PRIORITY TREE SPECIES SUCH AS THE SHORT LEAF PINE.





Work Area includes (Fairfax, Loudoun, Prince William, Fauquier, Rappahannock, Culpeper) October 1, 2018 – September 30, 2019 Reporting Period

Work Area		Fauquier
473	Harvest Inspections	124
20	Pre-harvest plans and assistance	9
7	Prescribed burns	Since 2013, 1000
140	Management Plans	volunteers have
19	Wildlife Habitat projects	6 planted 65.8 acres
10	Riparian Buffer projects	5
10	CREP re-enrolls	5
183	Public outreach activities	41

In Cooperation with SWCDs:

- Area foresters serve as technical service providers to the full slate of forestry practices in the Virginia Agricultural Cost-Share Program and NRCS CREP practices
- Pappahannock Area team is also a key partner for riparian buffer plantings that are installed after stream exclusion practices, including those conducted with community organizations and area schools. Foresters complete planting plans, store seedlings and other supplies, provide planting instruction and logistical support during community planting events.



Serve as Instructors at Field Days & Other Educational Programs



In cooperation with JMSWCD alone750 students are reached annually!





A SOCIETY GROWS GREAT WHEN OLD MEN PLANT TREES WHOSE SHADE THEY KNOW THEY SHALL NEVER SIT IN.

GREEK PROVERB



Congratulations!
2019 JMSWCD Partner Award

Our Foresters are Tops!



JOHN MARSHALL SWCD recognizes

VIRGINIA DEPARTMENT OF FORESTRY – RAPPAHANNOCK WORK AREA

AS AN OUTSTANDING PARTNER IN NATURAL RESOURCE CONSERVATION.

CONGRATULATIONS!

2019 CONSERVATION PARTNER AWARD



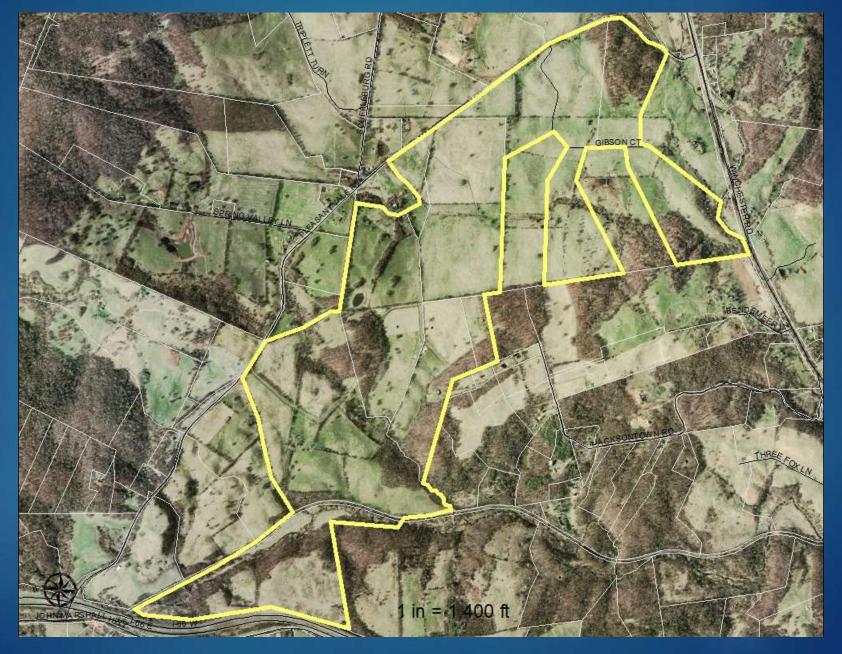
John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon



Virginia Farms, LLC

- Virginia Farms, LLC is located just west of the village of Delaplane, Virginia within the Upper Goose Creek Watershed (PL-06).
- The farms are owned and managed by the Chester Family and leased to Virginia Beef Corporation for livestock production with annual grazing of about 400 head of cattle.
- The farm is comprised of multiple parcels totaling about 1200 acres.
- It was assembled over 40 years through nearly 30 separate real estate transactions.
- Additionally, the majority of this land has been protected in perpetuity through conservation easements in partnership with Fauquier County Government.

Virginia Farms, LLC - Overview



Virginia Farms, LLC – Conservation Practices

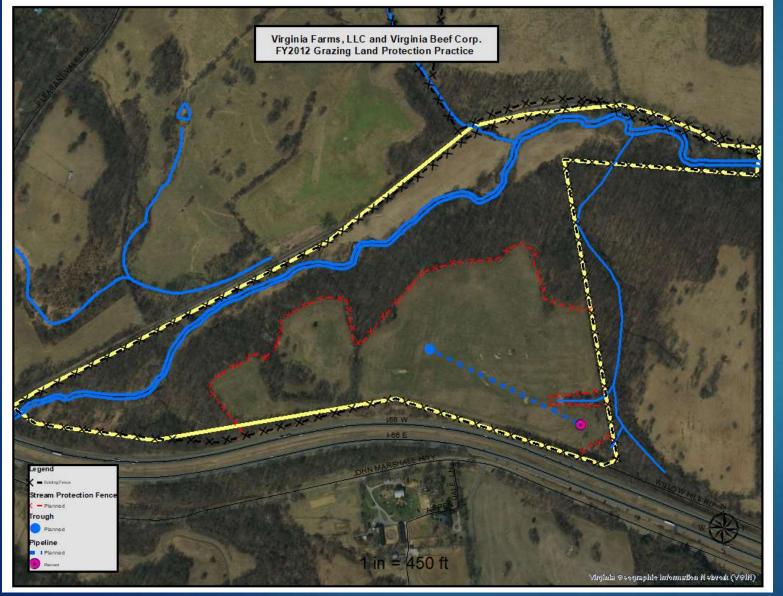
- As we like to say at the District "The conservation doesn't stop with the Conservation Easement"
- The Chester Family has taken this philosophy to heart and in 2007 began working with their tenant farmer, Virginia Beef, to implement a series of conservation measures to protect surface water quality, improve herd health, facilitate rotational grazing, and reduce soil erosion.
- These measures are particularly notable as Goose Creek has been listed as an impaired stream due to bacteria levels by the Virginia Department of Environmental Quality with cattle stream access being considered one of the major contributing factors to impairment.

FY2009 Grazing Land Protection Practice in Partnership with Virginia Beef Corp.



This practice was implemented on 112 acres of pasture and protected 4400 feet of streambank, creating 14.5 acres of riparian buffer along the stream.

FY2012 Grazing Land Protection Practice in Partnership with Virginia Beef Corp.



This practice was implemented on 102 acres of pasture and protected 8500 feet of streambank on Goose Creek creating 61 acres of riparian buffer.



FY2015 Phase 1 Grazing Land Protection Practice in Partnership with Virginia Beef Corp.



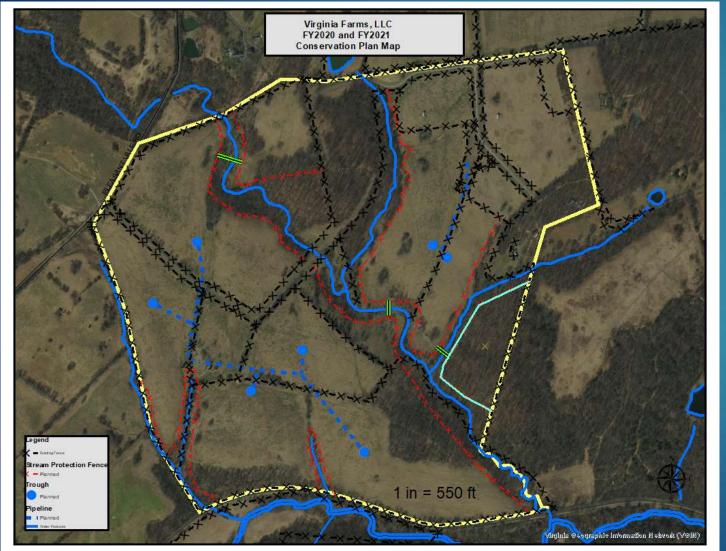
This practice was implemented on 150 acres of pasture and protected 11,700 feet of streambank, creating 43 acres of riparian buffer along the stream.

FY2015 Phase 2 Grazing Land Protection Practice in Partnership with Virginia Beef Corp.



This practice was implemented on 10 acres of pasture and protected 1,000 feet of streambank, creating 2 acres of riparian buffer along the stream.

Good Things to Come – Virginia Farms LLC is currently approved for a FY2020 Stream Protection Practice with another Planned for FY2021 on 485 acres of pasture.



Once constructed these practices will protect an additional 20,000 feet of streambank, and create 53 acres of riparian buffer on Kettle Run.



Virginia Farms LLC – Conservation Summary

- Over the last 10 years the Chester Family has protected over 25,600 linear feet of streambank in the Goose Creek Watershed.
- These efforts have created more than 120 acres of riparian buffer, an essential component to the ecological health of any stream.
- Combined, these measures have significantly improved water quality in the Kettle Run and Goose Creek.
- With the completion of the FY2020 and FY2021 practices this will constitute one of the largest individual livestock stream exclusion efforts completed in the Fauquier County portion of the Goose Creek Watershed.

JOHN MARSHALL SWCD recognizes

VIRGINIA FARMS, LLC FOR THEIR OUTSTANDING CONSERVATION AND LAND STEWARDSHIP.

CONGRATULATIONS!

2019 CONSERVATION FARM AWARD



John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon

2019 Local Clean Water Farm Award Ann Backer – Smitten Farm The Plains, VA



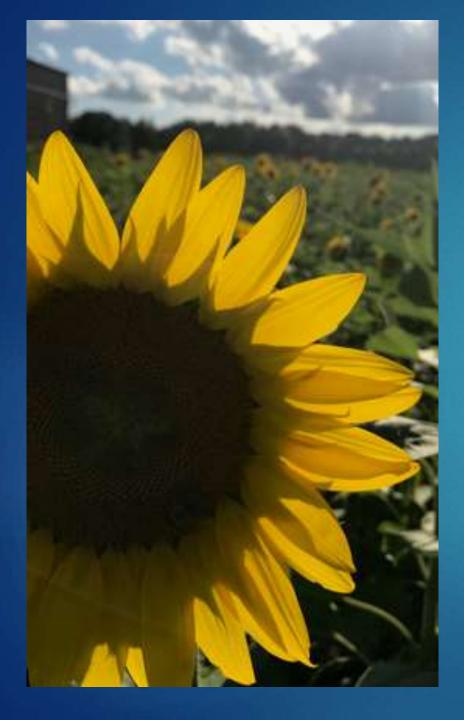
Cover Crop – Field now planted to permanent vegetative cover.

Smitten Farm

- Smitten Farm is located in The Plains, Virginia within the Cromwells Run Watershed (PL-09).
- It is comprised of two 800-ac farms, Smitten Farm and Salem Farm.
- Once a traditional row crop farm, the farm has transitioned to a permanent grass operation for hay and straw with very little acreage in row crops today.
- Their conservation ethic began with Mr. Backer (now deceased) witnessed the area becoming more and more developed. He saw a need not only for open space, but contiguous open space. He became focused on becoming a true steward of the land. The conservation ethic continues with Mrs. Backer and Smitten Farm staff.

Smitten Farm

- The farm encompasses:
 - 500 acres of both cool season and warm season grasses (primarily orchardgrass/fescue mix);
 - 460 acres of hayland (orchardgrass/alfalfa mix and orchardgrass/timothy mix);
 - 196 acres of continuously no-tilled cropland (wheat and rye for straw, and sunflowers for seed);
 - 253 acres of mixed woodland (providing wildlife habitat);
 - > 40 horses and 50 cow/calf pairs.
- Conservation practices implemented on the farm include nutrient management, cover crops, long-term vegetative cover on cropland, continuous no-till, precision ag, prescribed grazing, and forested buffers.
- The entire farm is protected by a permanent conservation easement co-held by PEC and VOF.



Annual Crops



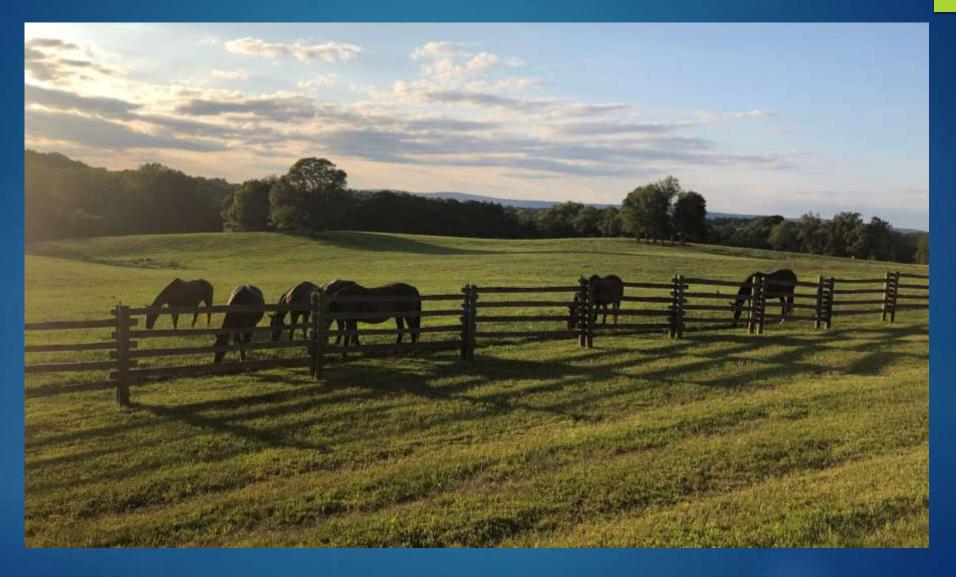
Sunflowers grown as a summer annual for seed to local buyers.

Harvesting Rye for Straw



Rye harvested for straw. Straw is used on farm and the extra is sold separately.

Retired Brood Mares



Mare and Foal



Smitten Farm Conservation Practices

- Nutrient Management
- Continuous No-Till
- Precision Ag All drills are calibrated per seed/per field.
- Long-Term Vegetative Cover (more than 219 ac)
- Cover Crops (more than 280 ac planted since 2017)
- Sod Waterways All sod waterways are planted to establish cover; the waterways are not hayed or sprayed.
- Prescribed Grazing Animals are managed based on forage height and species.
- Livestock Exclusion Animals are excluded from all but 10% of streams. The remaining is being addressed through current conservation planning efforts.
- Animal Waste Storage Horse manure is stored on a gravel pad in an area to prevent excess runoff. Manure is traded to local mushroom producers and used in the growing process. The "spent" or mushroom compost returns the farm to be used in poor production areas.
- Animal Health Staff monitor and measure parasite loads, preferring deworm on an as-needed basis, recognizing the deworming medications pass through the animals.
- Riparian Buffers More than 170 acres of riparian buffers exist on the farm.

Long-Term Vegetative Cover



Long-term vegetative cover planted on traditional row-crop acreage. Field planted to orchardgrass/alfalfa mix. Hay is made into 50-lb square bales for the local equine market.

Cover Crops





Cover crops planted to reduce winter rain and wind generated erosion; and to reduce the leaching of nutrients. The field on the left was planted in wheat to be harvested for straw; field on the right, rye to be harvested for straw.



Prescribed Grazing



Education and Outreach Programs





Smitten Farm regularly invites the US Pony Club members to the farm to educate members on equine health, pasture management, and rotational grazing.

JOHN MARSHALL SWCD recognizes

ANN BACKER – SMITTEN FARM FOR THEIR OUTSTANDING CONSERVATION AND LAND STEWARDSHIP.

CONGRATULATIONS!

2019 LOCAL CLEAN WATER FARM AWARD



John Marshall Soil and Water Conservation District 2019 Annual Awards Luncheon